Operational Logic and Identifying Soviet Operational Centers of Gravity During Operation Barbarossa, 1941

A Monograph
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ABSTRACT

OPERATIONAL LOGIC AND IDENTIFYING SOVIET OPERATIONAL CENTERS OF GRAVITY DURING OPERATION BARBAROSSA, 1941, by MAJ David J. Bongi, USA, 54 pages.

This monograph examines Soviet operational centers of gravity during Operation Barbarossa, the German invasion of the Soviet Union in 1941. Specifically, the examination focuses in two areas: (1) German planning for Operation Barbarossa; (2) the operational objectives selected for the second phase of the campaign.

The second phase was selected because it was during this phase that the focus of the German military effort became diverse. Two competing strategies within the German political and military command structure caused this. While political-ideological and economic factors influenced one, purely military concerns influenced the other. In the end, the Germans diluted combat power in phase two towards three operational objectives: Moscow, Leningrad, and the Ukraine.

Thus, the research question for this monograph is: Which, if any, of the German operational objectives for the second phase of the campaign were also Soviet operational centers of gravity?

The analysis of operational objectives uses Colonel William Mendel's and Colonel Lamar Tooke's analytical model called "Operational Logic: Selecting the Center of Gravity." Potential centers of gravity are analyzed using a validity and a feasibility test.

This monograph concludes that Moscow was the operational center of gravity for the campaign by virtue of its direct and intrinsic relationship to the strategic center of gravity--the Soviet Military.

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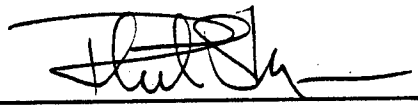

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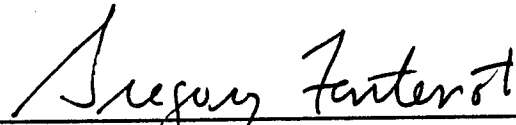

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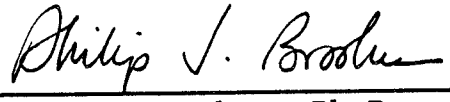

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I Introduction

At 0330 on 22 June 1941, the German Army invaded the Soviet Union. Operation Barbarossa, the code name for the invasion, involved more than three million men, 3,350 tanks, and 7,184 artillery pieces.[1] With the war still unfinished in the West, Germany opened a second front, thus provoking a two front war which earlier German military strategists such as von Moltke and von Schlieffen had so ardently attempted to avoid during the Great War. In the end, the greatest land invasion force in the history of warfare reached its culminating point before it was able to attain its strategic aims.

Questions and issues concerning Operation Barbarossa still abound today, permeating all three levels of war--strategic, operational, and tactical. For example: Did the strategy of opening a two-front war eventually produce a defeat for Germany? Did the Germans follow a preconceived campaign plan or did they use something closer to an *ad hoc* strategy? Was the failure in the East an inability to link the tactics with the strategy? Finally, one particular issue during the planning and execution of this campaign was the shifting of priorities at the highest levels of the German political and military command structure. In short, the influences of the political aims for this campaign often permeated down to the operational planning. This kind of influence caused operational commanders to divert forces

needlessly, dilute combat power, and eventually culminate before they could achieve victory.

Operation Barbarossa offers many lessons to the student of operational art. While all three levels of war are each worthy of independent study and examination, this monograph focuses at the operational level. Specifically, the emphasis is in two areas: (1) the planning for Operation Barbarossa and (2) the operational objective selected for the second phase of the campaign.

Why the second phase? During the first phase, the Germans focused military power against the Russian Army. Arguably, the Russian Army was an appropriate operational objective. Their destruction meant the remainder of the campaign would be a mere exploitation. However, during the second phase, the German focus became diverse. Two competing strategies caused this diversity. One influenced by political-ideological and economic factors, the other predominately by military concerns. In the end, the focus for phase two essentially split three ways. For Hitler, the primary focus oriented towards Leningrad and then the Ukraine. The Army focused on Moscow.

This leads us to the research question for this monograph: Which, if any, of the German operational objectives for the second phase of the campaign were also Soviet operational centers of gravity? There is, of course, a distinction between the two. Operational objectives are not

necessarily operational centers of gravity; however, the reverse is not true--operational centers of gravity must be operational objectives. This research question is important because German operational objectives identified as Soviet operational centers of gravity could have, in theory, provided the necessary focus for German combat power during this phase of the campaign. After all, that is one of the values of the concept of center of gravity, it provides focus.

While this premise is theoretically possible, one should remember that many influences which transcend pure military necessities drove German strategy in this and other campaigns. This monograph briefly discusses these political, economic, and ideological influences, but an extensive examination is beyond the scope of this study. The purpose here is to examine operational centers of gravity and the military means of achieving them.

Fifty-three years since Operation Barbarossa, the concept of center of gravity remains an enigma. Arguably, no other operational concept offers more discussion and debate than the concept of center of gravity. It is a concept that flows through our doctrine from the strategic to the tactical levels of war. Joint doctrinal publications as well as the Army's FM 100-5 identify the concept of center of gravity as one of the key concepts of theater and operational design.[2]

However, while the definition and description of this concept is generally understood by operational-level planners,

its application in the operational design of campaign planning is often difficult and, at times, confusing. Questions which often arise in the application of this concept are: How do we know that we have selected the correct center of gravity? Is there more than one? Is there a center of gravity at each level of war? Is there more than one at each level? Is it something abstract such as national will, or something more concrete like the enemy's armed forces. Does it ever change and if so, how will we know it has changed?

Questions such as these will continue to plague both doctrinal writers and operational planners alike. In determining German operational objectives as operational centers of gravity, this monogragh uses a logical methodology for selecting centers of gravity. In the June 1993 issue of Military Review, Colonel William W. Mendel, senior military analyst with the Foreign Military Studies Institute at Ft. Leavenworth, Kansas, and Colonel Lamar Tooke, faculty member at the U.S. Army War College, offered a methodology for selecting centers of gravity known as Operational Logic. This method provides the foundation for the analysis of Soviet operational centers of gravity during Operation Barbarossa.

Methodology

This monograph will review the concept of center of gravity and its relationship to the other elements of operational design in campaign planning. It reviews the history of the concept and its use today in campaign planning.

Second, this monograph will review Colonel Mendel's model--Operational Logic: Selecting the Center of Gravity. Third, this monograph will review German operations on the eastern front during the invasion of the Soviet Union addressing the following areas: Strategic Setting; Political, Ideological, and Economic Aims; Military Forces; Military Strategy; Strategic Objectives; Strategic Center of Gravity; Operational Plans; Operational Objectives. Fourth, these identified operational objectives will be applied to Colonel Mendel's model to determine their validity and feasibility as potential operational centers of gravity. Finally, the monograph will conclude with answering the research question.

II The Development of the Concept of Center of Gravity[3]

The great Prussian military theorist Carl von Clausewitz originally conceived the concept of center of gravity and it formed an essential part of his major work On War. Clausewitz, borrowing this concept from Newtonian physics, referred to the center of gravity as the "hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."[4] It was an important concept to the successful prosecution of war, thus prompting Clausewitz who wrote, "the first task, then, in planning for war is to identify the enemy's centers of gravity, and if possible trace them back to a single one."[5]

The logical question concerning this theoretical concept is: What exactly is a center of gravity? In other

words, what element or elements on the battlefield constitute the hub of all power? It is here that much of the confusion surrounding this concept emanates. Clausewitz, unfortunately, does not offer much help since he provided us with multiple definitions which can be classified into two domains of war: physical and moral (psychological).

In Book Four, Chapter Nine, Clausewitz's description of the center of gravity is the battle:

> Secondary objectives may combine with the principal one even in a battle, and the battle itself will be colored by the circumstances that gave rise to it. Even a battle is connected to a still larger entity of which it is only a part. But since the essence of war is fighting, and since the battle is the fight of the main force, the battle must always be considered as the true center of gravity of the war.[6]

While the essence of war is fighting and fighting is an essential part of battle, perhaps Clausewitz's assertion that battle is the "true center of gravity" is correct. Yet while battle is clearly an important part of warfare, we must remember that it is the fighting forces which do battle. Battle is an act of the fighting forces. Without fighting forces, there can be no battle. Furthermore, these fighting forces must be sufficiently strong to do battle. Regardless of how heroic and efficient a fighting force does battle, they may still be unsuccessful if they are numerically inferior to their opponent. Thus Clausewitz stressed the importance of strength through concentration. The best strategy, he said, "is always to be very strong; first in general, and then at

the decisive point. . . . There is no higher and simpler law of strategy than that of keeping one's forces concentrated."[7]

While battle was the ultimate purpose of a fighting force, "battle" per se was not a center of gravity. Clausewitz returned to the issue of concentration in Book Six and wrote that the center of gravity will always be where the mass is most densely concentrated.[8] Clausewitz believed that a blow directed against the location where the mass is concentrated would be the "most effective target." His logic was simple. The scale of victory depended on the size of the defeated force. In Clausewitz's day, the larger a force an army defeated, the greater the victory. Since the concentrated mass of an army was its largest formation, then, in theory, a blow struck at this formation would gain, as Clausewitz wrote, "the broadest and most favorable repercussions."[9]

The concentrated force of one's opponent offers a relatively easy description of a center of gravity. Clausewitz, however, gave us other possible centers of gravity to consider. In Book Eight, Clausewitz wrote:

> one must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed.[10]

Some of the examples Clausewitz offered as possible centers of gravity are: a capital in countries subject to domestic

strife; in small countries which rely on larger ones, it is usually the army of their protector; among alliances, it lies in the community of interest; and in popular uprisings, it is the personalities of the leaders and public opinion.

The first two descriptions, a capital and the army of a protector, remain within the physical domain of war. It is the last three examples which differ significantly by entering into the moral domain of battle. In this domain, the concept becomes less precise and is often the source of confusion for operational planners. Focusing combat power on a physical entity such as an army is inherently easier than attacking something as abstract as public opinion or a leader's personality.

Yet history offers examples where forces have successfully attacked centers of gravity in the moral domain of war. Public opinion as a center of gravity exists primarily in wars of exhaustion such as guerrilla warfare. In Vietnam, the U.S. never lost a battle. However, many will argue that the U.S. lost the war due to a loss of national will rather than ineptitude on the battlefield. The possibility of national leaders as center of gravity tends to lie within leaders holding absolute authority. For example, had the Allies eliminated Hitler early in the war, it is entirely possible that W.W.II would have ended with his demise. One could make the same assumption for both Napoleon

and the wars of the French Revolution as well as Saddam Hussien and the Iraqi Army during the Gulf War.

Although Clausewitz offered various possible centers of gravity, it is entirely feasible that in Clausewitz's era an opponent's center of gravity lay strictly where he concentrated the mass of his army. Clausewitz finished his discussion of this concept in Book Eight when he wrote:

> no matter what the central feature of the enemy's feature may be--the point on which your efforts must converge--the defeat and destruction of his fighting force remains the best way to begin, and in every case will be a very significant feature of the campaign.[11]

For Clausewitz, the center of gravity was the focus for one's combat power. However, even Clausewitz description of a center of gravity wavered from the physical to the moral domain of war. It could be something as abstract as a leader's personality or perhaps something as concrete as the enemy's main force. Attempting to resolve this issue is not the purpose here. The point is that Clausewitz offered us this concept as an analytical tool to assist military planners, primarily at the operational level, in focusing combat power to achieve decisive victory.

Today, in the tradition of Clausewitz, achieving decisive victory by attacking an opponent's center of gravity remains a key element of operational design within campaign planning. The campaign plan, either at the strategic or operational level, is the CINC's vision for linking the ends (objectives), the ways (concept), and means (resources) in

order to achieve strategic and operational objectives. The campaign planning process is both intuitive and a structured methodology for arranging the actions which must occur in the campaign planning cycle (see figure 1 below). The cycle begins with the strategic guidance which the Combatant Commander receives from higher authority normally expressed through the National Security Strategy and the National Military Strategy. The cycle continues, considering each of the events in order: derived mission, situation study, objectives, commander's concept, tasks for subordinates, supporting plans, and the final link in the cycle is the determination of plan feasibility and requests for change or augmentation.[12]

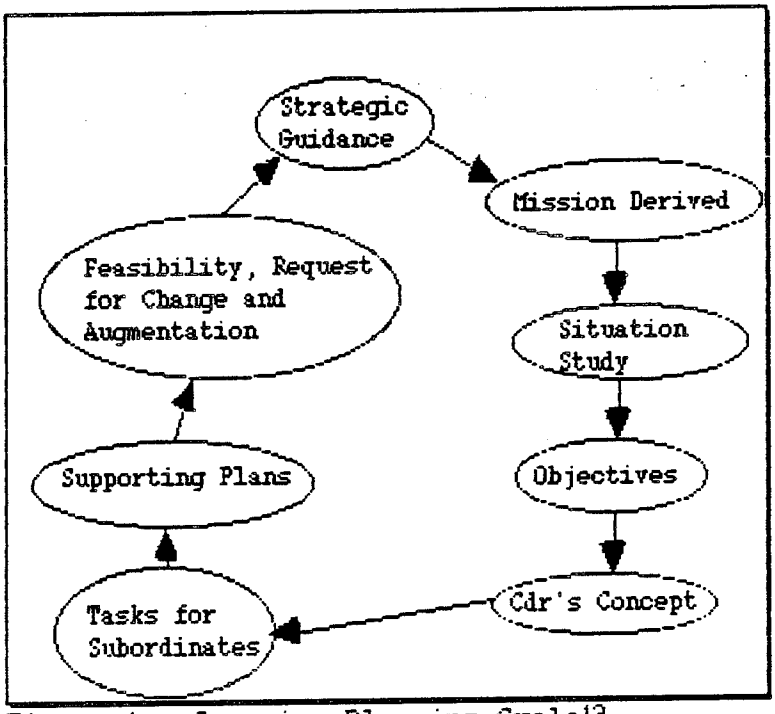

Figure 1: Campaign Planning Cycle[13]

We will briefly review the Situation Study and the Commander's Concept and their relationship to centers of gravity.

The Situation Study is key to campaign planning because it identifies the strategic and operational centers of gravity. This identification provides the focus for all that takes place in the planning process. The Commander's Concept in the planning cycle is the core for developing the campaign plan. It "provides for organizing land, sea, air, special operations, and space forces into a cohesive joint force to conduct concentrated and decisive operations."[14] The commander's concept seeks to gain strategic advantage over the enemy, attain an offensive initiative and defeat enemy centers of gravity.[15]

As previously stated, the concept of center of gravity is a key element of the operational design of the campaign plan. Operational design describes the interrelationship between the establishment of military conditions, campaign objectives, the application of resources, and sequencing of events. The concept of center of gravity fits into this process by providing the focus for operational design and achieving decisive victory.

Decisive victory remains the bedrock of our military strategy. The latest version of FM 100-5, June 1993, identifies the national military strategy's eight strategic principles. One of the eight is <u>decisive force</u>. Decisive force is the use of overwhelming combat power to defeat the

enemy in order to achieve decisive victory.[16] In order to achieve this type of victory, forces must apply overwhelming combat power against the enemy's main source of power--his center of gravity. In fact, FM 100-5 identifies the focusing of overwhelming combat power against the enemy's center of gravity as the essence of operational art.[17] Operational art also provides the means for designing campaigns and major operations by determining when, where, and why to employ the joint force.

So far we have discussed the development of the concept of center of gravity and its use today in the operational design of campaign planning. While current joint doctrine identifies a methodology for the campaign planning process, no such methodology exists for the selection of centers of gravity. A logical methodology is important since planners may identify numerous components within the enemy's political, economic, and military structure that are of strategic importance.[18] However, not all of these components are of equal value. The problem for military planners is how to select which component or components constitute the "hub of all power and movement, on which everything depends."

Figure 2 on page 13 graphically depicts the authors' methodology.

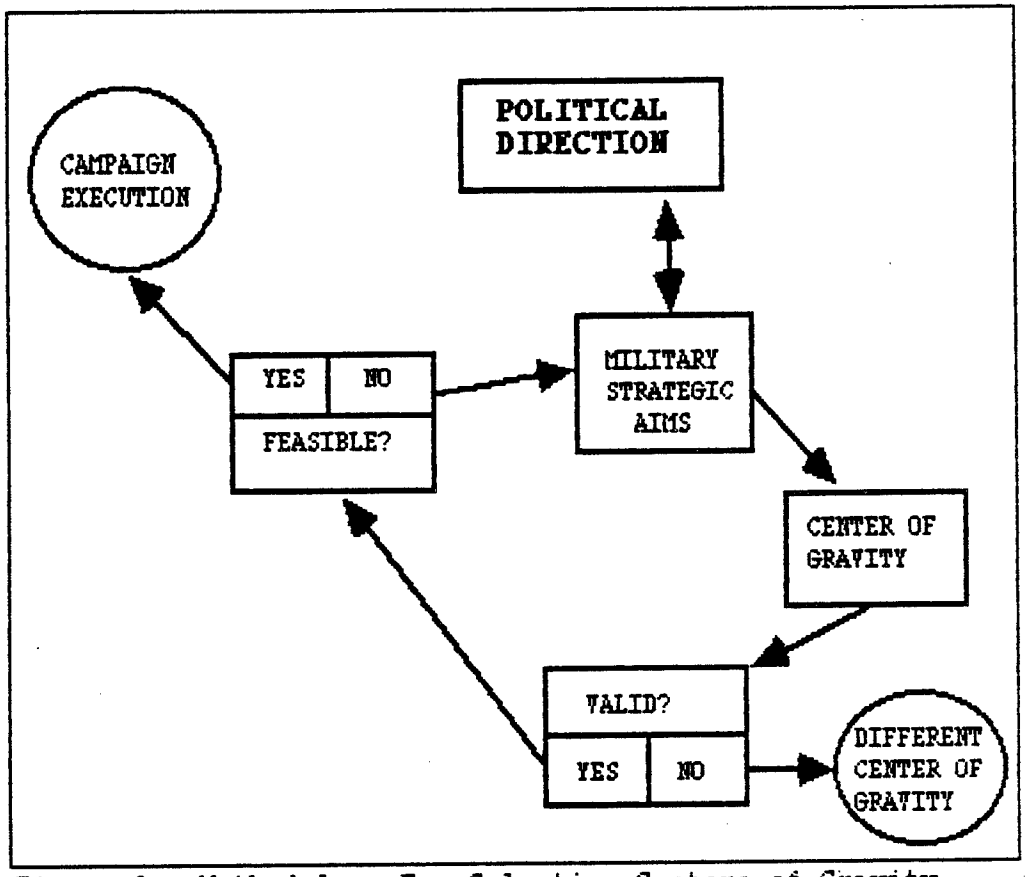

Figure 2: Methodology For Selecting Centers of Gravity

The central premise for this methodology is a strong linkage between strategic aims and the center of gravity. This linkage between aims and center of gravity applies at all levels of war. Understanding the relationship between the two--aims and center of gravity--is vital to the selection of a center of gravity. The authors trace this relationship back to FM 100-5 which defines operational art as the:

> skillful employment of military forces to attain strategic and/or operational objectives within a theater through the design, organization, integration, and conduct of theater strategies, campaigns, major operations, and battles. . . . Its essence lies in being able to mass effects against

the enemy's main source of power--his center of gravity.[19]

Here the linkage is clear. The essence of operational art lies in massing combat power against the enemy's center of gravity. The destruction, defeat, or neutralization of this center of gravity achieves strategic or operational objectives. Indeed, the authors argue that success is only relevant if the exploitation or destruction of the selected center of gravity leads to the accomplishment of the strategic aims.[20] Ultimately, all aims and objectives at the strategic, operational, and tactical levels must contribute to the accomplishment of the strategic center of gravity. If the linkage does not exist between these levels, tactical objectives could begin to shape strategy.

The authors base this methodology for selecting centers of gravity on two principles concerning the relationship mentioned above:

A. Centers of gravity are derivative of the aims or objectives established at the level for which you are planning.[21]

B. Aims or objectives established at the operational or tactical levels should contribute to our ability to impose our will over the center of gravity at the next higher level of war.[22]

Finally, the authors present validity and feasibility tests that assist the planner in analyzing the selected center of gravity. In the validity test, the planner must ask: Does

the application of combat power directed against the selected center of gravity significantly deteriorate morale, cohesion, and the will to fight thus preventing the enemy from achieving his aims and while allowing friendly forces to achieve their aims? If the answer is no, this may not be a center of gravity. If the answer is yes, we must then ask: Do we have the ability to impose our will over the selected center of gravity?

III German Strategy--Operation Barbarossa

Strategic Setting.

On 1 September 1939 Germany invaded Poland. This initiated a string of impressive victories by the German Armed Forces on the European continent. In its campaign against Poland, Germany crushed the Polish military force; a force that numbered several million. Within 24 days, the German military either defeated, imprisoned, or dispersed all of Poland's active and reserve forces.[23] Britain and France, in fulfillment of their alliance with Poland, declared war against Germany on 3 September, 1939. However, Hitler had removed any danger of a Soviet intervention by signing the Nazi-Soviet Pact on August 23, 1939. This diplomatic maneuvering not only removed a potential enemy, but also gained a temporary ally.[24]

Following the Nazi-Soviet Pact and the agreement to partition Poland, the Red Army moved up to and beyond the line

of the Bug River (see Appendix B, map 1). The occupation of the Baltic States--Latvia, Estonia, and Lithuania--and the eventual conquest of Finland in March 1940 expanded the western frontiers of the Soviet empire by hundreds of miles. In June 1940, Stalin's extortion of the province of Bessarabia from Rumania placed the Red Army near the oil fields of Ploesti, Germany's chief supply of European oil.[25] Despite this threatening move, Stalin fulfilled his portion of the Nazi-Soviet Pact by providing oil and grain to Germany in an attempt to offset the effects of the British naval blockade.

After the invasion and defeat of Poland in September 1939 until April 1940, a long pause in the war covered the continent popularized by the media as the "Phony War." During this time, Germany was preparing for the invasion of the West. However, this preparation ended prematurely when Germany invaded Denmark and Norway on 9 April 1940. Hitler had not intended to wage war against these states as they posed no threat to the security of the Reich, but several reasons prompted the invasion of both countries as described by Matthew Cooper in The German Army 1933-1945:[26]

A. The threat to Germany's northern flank increased with the Soviet invasion of Finland. Under the pretext of aiding the Finns, the Allies might violate Norwegian neutrality and attack Germany's northern flank.

B. Norway was vital to the traffic of iron ore between Sweden and Germany. Any occupation of Norway would interfere with Germany's war production.

C. The German Navy was pressing for bases beyond the North Sea and Norway satisfied this requirement.

D. The invasion of Denmark would reinforce the Baltic region and gain advanced fighter bases for the German Air Force.

In the end, the German Army was again victorious with Denmark falling in one day and Norway in one month.

Just one month after the invasion of Denmark and Norway, Germany invaded Holland, Belgium, and France on 10 May 1940. While French strategy concentrated on linear defense and firepower, the Germans employed quick decisive maneuver and the indirect approach, producing a paralysis and moral disintegration of their opponent. The German main attack comprised 45 divisions which smashed through the light French defenses in the Ardennes. German forces advanced rapidly toward the coast dividing the Allied Forces. By 4 June, the battle ended. On 25 June, after the fall of Paris, the firing ceased. This proved to be one of the most decisive campaigns in the history of warfare. Germany defeated Holland in five days and Belgium in seventeen. France delayed its defeat longer, but fell on 22 June. In approximately six weeks, the German Armed Forces crushed one of Europe's most powerful armies. Germany now controlled from the English Channel to

central Poland and well into Scandinavia. Prior to Operation Barbarossa, Germany invaded the Balkans in April 1941 and defeated Yugoslavia and Greece in three weeks.

Political-Ideological and Economic Aims: Operation Barbarossa.

The political aims for Operation Barbarossa focused on achieving an independent Ukraine and a confederation of Baltic States under German domination.[27] Later, Hitler added the additional aim of "depriving Britain of her last hope on the continent." Yet to end the discussion here about political aims is misleading since it gives the impression that these aims had relevance to the overall strategic situation on the continent.

Briefly, Hitler's grand strategic aims for the invasion of the Soviet Union rested upon two fundamental precepts.[29] First was the concept of *Lebensraum* or "living space." For the Nazis, *Lebensraum* offered a cure for the economic problems facing Germany and the eventual problems of overpopulation predicted for the future.[29] The vast expanse of Russia offered both the natural resources and fertile plains needed for economic growth as well as plenty of space needed for a growing German population. Second, *Lebensraum* not only offered economic benefits, but also helped fulfill Hitler's ideological aims shaped by his racist beliefs. Hitler saw the Russian people as an inferior race. Furthermore, he believed

Russia to be the center of Bolshevism which, to Hitler, was a Jewish plot for world domination.[30]

Military Forces.

The German Armed Forces for Operation Barbarossa included 135 divisions of the following types: nineteen panzer, ten motorized infantry, 106 infantry.[31] Small contingents of Romanian and Finnish forces were also available, but their equipment, capabilities, and combat efficiency were well below that of the Germans'. The Germans divided the 135 divisions into three army groups--North, Center, and South. Army Group North consisted of a total of 28 divisions.[32] Army Group Center consisted of a total of 53 divisions.[33] Army Group South consisted of a total of 45 divisions.[34] The OKH strategic reserve consisted of nine divisions.[35]

In support of the land campaign, the German Air Force in the east consisted of approximately 3000 aircraft. These included 1000 long-range bombers, 400 dive-bombers, 900 fighters, and 700 reconnaissance and patrol planes. The Germans divided the air force into four groups--first, second, fourth, and fifth air forces. The Fourth Air Force supported Army Group South with 600 total aircraft.[36] The Second Air Force supported Army Group Center with 910 total aircraft.[37] The First Air Force supported Army Group North with 430 total aircraft.[38]

The strength of the Soviet Military in the western theater (Army, Navy, Air Force) varies with historians ranging between 145-180 divisions in June 1941. While Stalin estimated the strength as high as 180 at the start of the war, German intelligence in June 1941 placed the number of divisions at the front at 150.[39] The Soviets divided their Army into three army groups--Baltic, Northwest, and Southwest.[40] The Soviet Air Force (includes both Europe and Asia) consisted of approximately 8000 aircraft.[41] The two Soviet Fleets, one in the Baltic Sea and one in the Black Sea, included several different types of naval vessels: battleships, patrol boats, destroyers, and submarines (see endnote for complete list).[42]

The relative combat power ratio between German and Soviet forces did not favor the Germans. Even given the last German estimate in June 1941 of 150 Soviet divisions, the best the Germans could muster was about 145 including allies. This meant that the Germans would have to mass their combat power at decisive points in order to defeat the Soviet Army quickly to prevent them from accomplishing their aim. The Soviet Union's aim was to maintain a strategic defensive posture. This would allow time to complete the arming and modernization of its armed forces. To accomplish this, the Soviets planned to defend in depth, executing delaying actions at principal terrain obstacles, and avoiding large-scale retreats following enemy breakthroughs.[43]

The Germans believed they had at least two advantages to compensate for numerical inferiority, combat efficiency and strategic surprise. Indeed, the Germans were superior to the Soviets in terms of training, equipment, and doctrine. The Germans had refined and improved all three through combat experience gained since the invasion of Poland. They believed their *Blitzkrieg* tactics, which overwhelmed the French, would be equally successful in the East.

For the German planners, strategic surprise was essential to a "lightning campaign." Gaining strategic surprise would help to trap the bulk of the Soviet Army before it could retreat into the interior. With the Soviets trapped, the better equipped and trained German forces would destroy them in encirclement operations. (The extent to which they achieved strategic surprise is debatable.[44])

Other Factors--Time, Space, and Terrain.

From the outset of this campaign, the element of time would weigh heavily on military planners and commanders alike. Favorable weather was the primary consideration in determining the "right time" for the invasion. Generally, May to October presented the most favorable weather for an invasion. Thus, the campaign had to achieve its aims prior to the arrival of the Russian winter after October.

Unlike the campaign in the West, the Eastern Front differed significantly in terms of space. The geographic area in the eastern theater was 20 times larger than the theater of

operations in the West. Operations would cover an area extending 2000 miles from the Arctic Ocean to the Black Sea and over 1700 miles from the Elbe to the Volga Rivers (see Appendix B, map 1). This presented enormous strains on German command and control and logistic systems. Operationally, the Germans had to figure out a way how to achieve a quick victory against an opponent who could retreat into a vast interior, much the same way the Russians did against Napoleon in 1812.

The Pripyat Marshes were the most significant terrain feature affecting German operational planning which lay directly in the center of the proposed front (see Appendix B, map 1). This marsh is an enormous swampland measuring 150 miles in width from north to south and over 300 miles in length. It literally divided the Soviet territory west of the Dnepr and Dvina Rivers into separate theaters of operation. The direction of trafficable roads in both theaters was north-south, generally following the rivers.

A poor road network limited mobility in the south. Only one main highway existed, the west-east highway via Kiev. Moreover, an advance in the south would have to contend with three major rivers--Dnestr, Bug, and Dnepr. North of the Pripyat, the road and rail network was the best in the Soviet state linking Warsaw and Moscow. This major line of communication ran in the same direction of the German's advance. Furthermore, forces advancing in the north faced only one river, the Dvina.

Military Strategy.

It would be illusory to synthesize German military strategy for this campaign into a clear-cut end state with feasible means and valid ways to accomplish it. The reasons for this vary from political-ideological factors to economic factors which are complex and often inexplicable. We will briefly focus on the two competing strategies (Hitler's vs. the Army's) which affected German military strategy.

While both strategies aimed at the destruction of the Soviet Military, the difference lay in the method. Hitler based his strategy on an ideology shaped by race and domination that sought to conquer the Soviet's social and economic centers.[45] Hitler wanted to attack the flanks into Leningrad and the Ukraine (social and economic centers) thus enveloping the Soviet forces. Hitler stated on 3 February during an operational briefing for Barbarossa:

> It is important to destroy the greater part of the enemy not just to make them run. This will only be achieved by occupying the areas on the flanks with the strongest forces, while standing fast in the center and then outmaneuvering the enemy in the center from the flanks.[46]

The competing strategy from the Army Command under General Halder proposed a direct attack on Moscow. This strategy sought the destruction of the Soviet Military not through strategic envelopment, but by a direct attack on Moscow. In theory, this would paralyze the Soviet leadership, diminishing any possibility of a coherent defense by the Soviet Military.

Both methods employed a strategy of annihilation with the Soviet Military as the objective. Hitler's strategy would diverge forces across the Soviet front while the Army's would converge forces towards one objective. The result of the two competing views produced a military strategy that simply ignored the numerous studies and wargaming exercises conducted prior to the invasion. These studies produced a simpler plan in terms of fewer lines of operation, concentration of forces at decisive points, and ultimately unfettered by irrelevant ideological motives. In the end, these competing views tore apart German strategy as General Erich von Manstein wrote in Lost Victories, "a tug of war over strategic objectives. . .throughout the campaign."[47]

Strategic Objectives.

Directive 21, dated 18 December 1940,[48] identified the strategic military objective for the campaign in the following statement:[49]

> The ultimate objective of the operation is to screen European against Asiatic Russia along the course of the Volga [River] and thence along a general line extending northward toward Archangel.[50]

While somewhat ambiguous as a strategic military objective for the campaign, the reasoning behind this objective would permit the Luftwaffe to strike Soviet industrial centers beyond the Urals, preventing a recovery from the invasion. Also, it would prohibit Russian bombers

from attacking German industrial centers and especially Romanian oil fields.

Strategic Center of Gravity

The Germans did not mention a strategic center of gravity in the final directive for Barbarossa. However, it was clear that the Germans focused military power against the Soviet Military, whether directly or indirectly depending on the strategy. In pure military terms this was logically sound. The defeat or destruction of the Soviet Military would inevitably cause the Soviet state to collapse. The German's problem was how to attack a strategic center of gravity dispersed from the Baltic to the Black Sea. This made the German intent for a quick campaign impractical.

Operational Plans.

The final plan for Operation Barbarossa used a strategy of annihilation to defeat "Soviet Russia in a lightning campaign."[51]. The original plan contained four phases. During the first phase, as outlined in Directive 21, Operation Barbarossa:

> the bulk of the Russian Army stationed in western Russia is to be destroyed in a series of daring operations spearheaded by armored thrusts. The organized withdrawal of intact units into the vastness of interior Russia must be prevented.[52]

To do this, the German Army would destroy the bulk of the enemy in western Russia using a series of main effort penetrations by infantry and accompanied by infantry frontal

attacks. The Germans would exploit these breakthroughs with armored forces, driving deeply into the enemy rear area enveloping enemy forces now pinned in their positions by infantry, thus forcing the enemy to fight in an inverted front. In this way, the Soviet forces would face destruction through a series of cauldron battles--the decisive maneuver of double envelopment ending with the annihilation.

In support of the campaign, Army Group North planned to attack towards Leningrad from East Prussia. This attack would cut off the enemy in the Baltic area and wedge them against the Baltic Sea. Army Group Center, advancing from northern German-occupied Poland, planned to breakthrough Russian defenses and attack in the direction of Minsk, encircling enemy forces and destroying them between the border and Minsk. The attack would continue towards Smolensk where a strong portion of Army Group Center's mobile strength would support Army Group North destroying enemy forces in the Baltic and Leningrad area.[53] These two Army Groups comprised the German main effort for the invasion. Army Group South would advance from southern Poland and attack in the direction of Kiev toward the great bend in the Dnepr River. Its mission was to envelop and then destroy Soviet forces in Galicia and the western Ukraine.[54] The second phase of the campaign called for a fast pursuit. German forces would attack to a line that generally ran along the Volga River extending northward toward

Archangel. This would place Soviet air power out of range and thus incapable of attacking German territory.

The mission of the German Air Force was to paralyze the enemy air force and to support the Army's operations at the points of main effort. In particular, the Luftwaffe would support Army Group Center and along the north wing of Army Group South. The Navy's focus was in the Baltic. There, it would defeat the Soviet Navy and prevent enemy forces from escaping prior to the capture of Leningrad.[55]

The third phase focused on the envelopment of remaining Soviet Forces in the vicinity of Moscow and the final phase was a thrust to the Volga and the Caucuses.

Operational Objectives.

As previously stated, the Soviet Army was the operational objective for the first phase of the campaign. Yet the Soviet Army as an objective is rather ambiguous. The language used in Directive 21 emphasized operational concepts instead of operational objectives. Objectives denote something tangible such as a city, an army, a port facility. These provide something for which commanders can direct combat power against. On the other hand, operational concepts such as "swift and deep thrusts. . . to tear open the front of the mass of the Russian Army" or "the Russian Army. . .is to be destroyed in a series of daring operations spearheaded by armored thrusts" are abstracts which merely tell commanders,

albeit in ambiguous terms, *how* to attack, rather than specifically *what* to attack.

In the second phase of the campaign, the focus on operational objectives became somewhat clearer. This is not to imply, however, that the Germans linked to the accomplishment of higher aims and objectives. When considered independently of one another, these objectives had sound strategic implications, making them worthy of attention. When considered together as part of a phase of the campaign, they diluted combat power, instead of concentrating it. The operational objectives for the second phase of Barbarossa were: Leningrad, the Donets Basin of the Ukraine and Moscow.[56]

In the next section, we will review each of these operational objectives to determine whether they were also operational centers of gravity.

IV Analyzing German Operational Objectives

Figure 3, on page 29, graphically portrays our discussion up to this point. While it is doubtful that the Germans laid out their strategy as depicted in figure 3, the chart helps to show a linkage between aims, objectives, and centers of gravity necessary for our analysis.

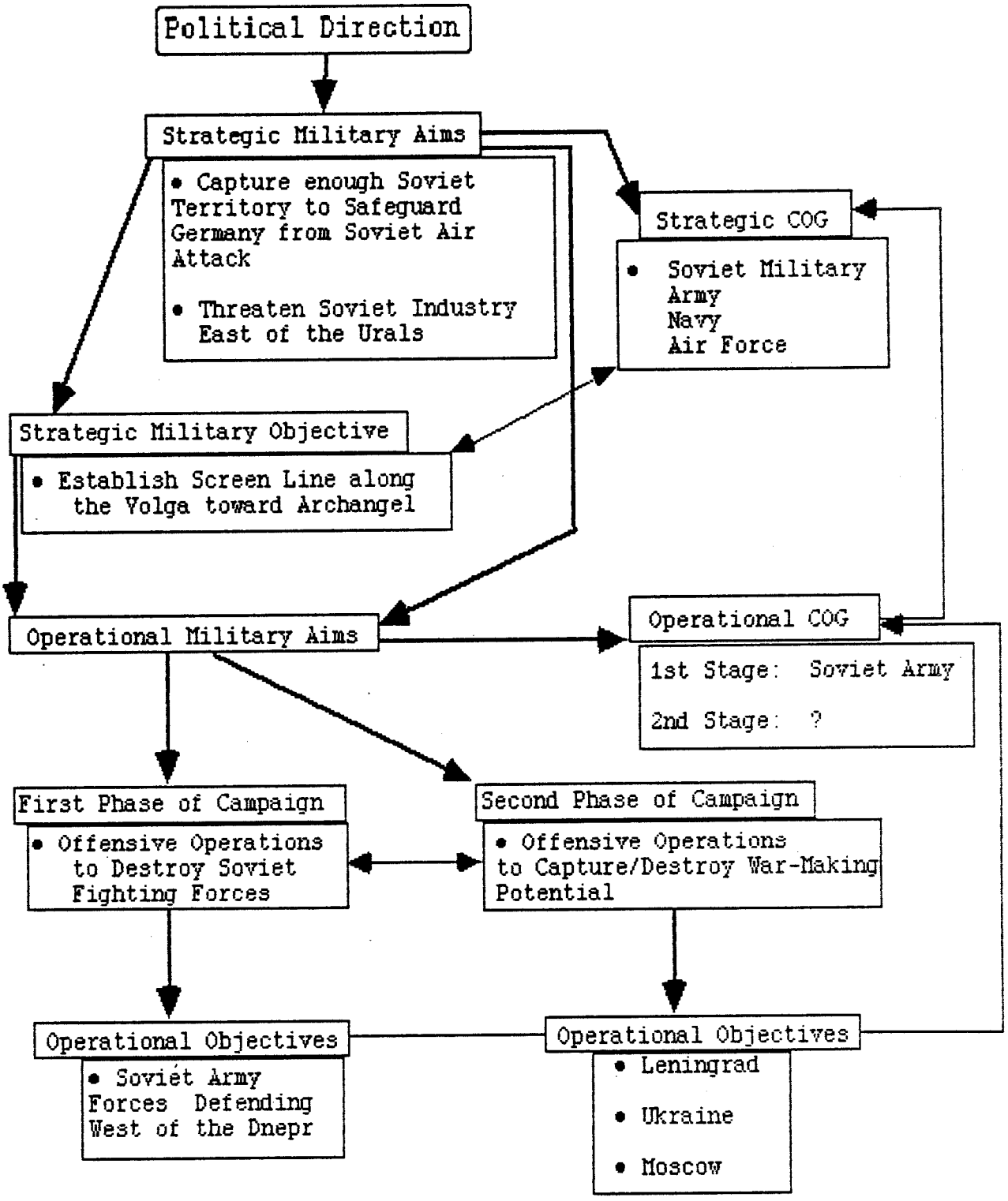

Figure 3: Aims, Objectives, and Centers of Gravity for Phases 1 & 2.

The political direction provided the development of the military strategic aims.[57] For Barbarossa, the military aims focused on safeguarding German territory while simultaneously threatening Soviet industry beyond the Urals. To achieve these aims, the Germans had to attack deeply into Soviet territory. In turn, this determined the strategic military objective, to establish a defensive line generally along the Volga River and then north to Archangel. This planned defensive line was sufficiently deep to satisfy both strategic aims. Soviet bombers east of the line could neither range German territory nor the Romanian oil fields. It also permitted the German Air Force to range key industry and mobilization centers east of the Urals.

The strategic military aims also elicited the strategic center of gravity, the Soviet Military. The existence of this organization would allow the Soviets to accomplish their aim while preventing the Germans from accomplishing their strategic aims. Therefore, the Germans had to destroy or defeat the Soviet Military since this would allow the them to accomplish their strategic objective and aims.

From the strategic military aims and objective, we derive the operational military aims and divided them into phases one and two. The operational military aim for phase two (our focus) was offensive operations to capture or destroy

Soviet war-making potential and resources. This translated into key industrial centers and areas of natural resources: Leningrad, the Ukraine, and Moscow. Undoubtedly, these operational objectives could have a great influence over the strategic center of gravity. The capture or destruction of any of them would help to establish the conditions for the destruction of the Soviet Military.

All three objectives were appropriate operational objectives, given their impact on the strategic objective and the strategic center of gravity. However, the question which remains is: Was it feasible for the Germans to capture all three, considering their time constraints? Given the German force structure, a primitive Soviet infrastructure, and spatial considerations in an enormous theater of operations, the answer is no. This leads us back to our hypothesis that if the Germans identified one of these objectives as an operational center of gravity, it could have provided the focus needed to concentrate forces instead of diluting them across the Soviet frontier.

The Validity Test.

Here we will apply the validity test to each operational objective by asking: Would capturing any of these objectives have created a deteriorating effect on morale, cohesion, and will to fight that would prevent the Soviets from accomplishing their strategic aim and allowed Germans to accomplish their strategic aims? To answer this question we

must link the defeat or destruction of the strategic center of gravity to the strategic aims. The defeat or destruction of the strategic center of gravity would ensure the accomplishment of German strategic aims. Conversely, protection of the strategic center of gravity would permit the achievement of the Soviet aim. Now the question is: Which operational objective would have caused a deteriorating effect on morale, cohesion, and will to fight of the Soviet Military if captured?

Questions concerning the moral domain of battle are often difficult to answer with any degree of certainty. One can rarely predict the impact that an action in combat will have on a unit's cohesion, moral, and will to fight. Therefore, in order to answer this question we must examine the significance of these operational objectives relative to the strategic center of gravity. In other words, had the Germans captured one of the operational objectives, how significant would the affect have been on the Soviet Military. We must, however, base the evaluation on the facts available to the Germans prior to the invasion.

Leningrad. Leningrad had significant strategic military value for several reasons: First, the capture of the port facilities in Leningrad would have deprived the Soviet Baltic Fleet of its main operating bases.[59] With the Soviet Fleet out of the Baltic, this would have ensured the security of Swedish iron ore shipments across the Baltic to Germany and

allowed the German naval effort to concentrate on Great Britain. Second, the capture of the armament production facilities in Leningrad would obstruct the Soviet war effort. Leningrad, as the second largest industrial base within the Soviet Union, contained a large armament facility. Third, the capture of the port facilities in Leningrad could have eased the flow of logistics to German Army Group North by opening a new line of communication. Once supplies entered the port, the railway system (that also had a direct connection to Moscow) could transport supplies forward. Finally, it would protect the northern flank of Army Group Center from a possible Soviet counter-attack.

Undoubtedly, the capture of Leningrad could help the Germans to achieve the strategic center of gravity, but it is doubtful that the capture of Leningrad would have created a deteriorating effect on the morale, cohesion, and will to fight of the Soviet Military. For the Soviets, the loss of the armament facility would hinder, but by no means cripple, armament production. The loss of the Baltic Fleet would mean very little in a war that would be fought and won primarily on land. For the Germans, the benefits of gaining the port facilities and the relatively good rail system in the Baltic States would create a favorable logistics situation for Army Group North, but would do little for Army Group Center or South.

Ukraine. While Leningrad had a direct military value, the Ukraine had a potentially equal strategic significance albeit an indirect value. Natural resources such as coal from the Donets Basin, wheat from the Ukraine, and oil from the distant Caucasus region made the Ukraine important. This was the reason that Hitler considered the Ukraine to be the economic power of the Soviet Union. Its capture by the Germans would have given them a good supply of food and a much needed oil source for not only the continued prosecution of the war, but also for the economic exploitation of Soviet territory after the war.

While these resources were vital to a protracted campaign, they were not essential for a quick decisive campaign. Remember, the Germans planned to "crush Soviet Russia in a lightning campaign" before the onset of the Russian winter and even before the defeat of Great Britain.[59] The Germans did not envision a protracted war; therefore, the expenditure of means to capture resources not directly linked to the achievement of the campaign ends was needless.

Moscow. As Paul Carell wrote in his book, Hitler Moves East, Moscow was "the heart and brain of the Soviet empire."[60] It contained the nerve center for the Soviet Union--the communications network for essential state-wide communications. It also served as the transportation hub of the Soviet Union in which "all roads [and railroads] led to Moscow."[61] Moscow had the largest industrial output of any

city in the Soviet Union. In fact, Moscow and the surrounding industrial area accounted for more than 18% of the overall production in the Soviet Union.[62] What is more important, as the center of political leadership, Moscow provided essential guidance and direction to the Soviet Military.

Losing Moscow could have been catastrophic to the Soviet Union since its loss would significantly affect both the Soviet Military and the Soviet strategic aim. The Soviet Military would have been unable to execute a coherent defense in order to gain time for mobilizing and modernizing its forces. Losing state-wide communications would have impeded Soviet command and control throughout the country. The Soviets would have been unable to exploit interior lines needed to transport reinforcements from the east. The loss of a substantial portion of Soviet war industry would impede modernization efforts. Furthermore, as the capital, Moscow's fall might have been grave on the morale, cohesion, and will to fight of the Soviet Military. As General Heinz Guderian wrote in, Panzer Leader, the capture of Moscow would have had an "enormous psychological effect on the Russian people."[63] In the Marcks' plan (discussed on the next page) Moscow constituted the ". . .spiritual center of the USSR."[64] From statements such as these, we can deduce that this psychological effect would have adversely affected the morale, cohesion, and will of the Soviet Military.

For the Germans, Moscow's capture would have had an enormous impact towards the accomplishment of the strategic center of gravity and their strategic aims. Indeed, many in the German military believed Moscow to be critical to defeating the strategic center of gravity. Several German studies conducted prior to the invasion deemed Moscow's capture essential.

In the Lossberg study conducted in September of 1941, the author emphasized the importance of Moscow when he concluded that the Germans needed a:

> concentration of force in the center using most of the Panzer and motorized formations for deep thrust towards Minsk-Smolensk-Moscow.[65]

The Chief of Staff of the 18th Army, General Marcks, briefed Hitler on 5 August 1940. Marcks' plan made Moscow the "main operational objective."[66] Moscow was the key to the destruction of the strategic center of gravity. A direct thrust on the capital by a main effort attack would lead to the destruction of the Russian forces west of Moscow. The capture of Moscow, Marcks noted, would "destroy the coordination of the Russian state."[67]

Moreover, the capture would help the Germans to achieve a "quick campaign." An attack aimed directly at Moscow would bring the bulk of the Soviet Army in contact with the German Army since they would naturally advance to defend the capital. W. Anders' book, Hitler's Defeat in Russia, supported this premise. The author had conversations with a

"score of high ranking officials" in the Soviet Military who said that it would have been necessary "to muster all available forces from every possible source for the defense of the capital. . . ."[68]

Hitler also understood the importance of Moscow. In Directive 21, dated 18 December 1940, Hitler stated: "Moscow must be reached as soon as possible. The political and economic significance of capturing this city is tremendous."[69] However, on 5 December 1940, prior to the release of Directive 21, Hitler stated in a planning conference that "what matters most is to prevent the enemy from falling back before our onslaught. . . . Moscow is of no great importance."[70]

This sort of vacillation is incomprehensible. Hitler's based his reasoning on the desire to first destroy the bulk of the Soviet Military west of the Dnepr by strategic envelopment from the flanks. Undoubtedly, political-ideological and economic factors motivated Hitler. To Hitler, the Germans needed to capture Leningrad and the Ukraine to achieve them.

In the validity test of "Operational Logic," we have analyzed the importance of each operational objective.[71] Of the three operational objectives, Moscow comes closest to being considered as an operational center of gravity by virtue of its direct and intrinsic link to the operational aims strategic center of gravity for the campaign. In the next step, we will apply the feasibility test to Moscow.

The Feasibility Test.

The question now is: Was it feasible for the Germans to capture Moscow? The answer is yes, but only if done rapidly from the initial stages of the war (this point will be expanded below). We must consider a rapid attack on Moscow within the time constraints set forth for the campaign in light of the terrain, the road conditions, the enemy situation, and the German force structure. The Germans planned to accomplish their aims prior to the onset of the Russian winter. This meant that a portion of the German force (undoubtedly the main effort) would have to conduct a direct assault on Moscow in order to capture it prior to October.

The terrain in this part of the theater favored a rapid assault with the only major obstacles being the Dnepr and Dvina Rivers, which the Germans prepared to cross. The road network was the best in the theater. A direct approach using this road network--Warsaw-Sluzk-Minsk-Vitebsk-Moscow--during the summer months would also ensure that mud would not be a problem. Furthermore, reaching Moscow during the summer months meant more daylight which, in turn, meant additional German air support.

What about the enemy situation? The German advance towards Moscow would have had to avoid becoming decisively engaged with significant Soviet Army units. Doing so, would mean the German forces would arrive in better fighting condition than if they had fought the entire way to Moscow,

becoming bogged down in needless tactical engagements. A direct advance also meant capturing the city would have been easier. The Germans would have been able to reach Moscow prior to the Soviets reinforcing it from either the strategic reserve or from Army Group West. Finally, in the early stages of the war, Soviet industry started redeploying east of the Urals.[72] A rapid German advance might have been able capture or destroy vital components of Soviet industry preventing or at least seriously delaying the eventual Soviet Military modernization.

But what if the Soviets repositioned forces, as anticipated, between the German Army and Moscow? Certainly this would have delayed the capture of Moscow, but it would have also played into the Germans' hands. This would have brought the bulk of the Soviet Army (very inferior to the Germans at this early stage of the war) into direct contact with the German Army, thus preventing the Soviet Army from withdrawing into the interior.

What would be the German organization for this attack? Obviously, the campaign plan determined the organization and arrangement of forces. Modifications to the plan would be necessary for a rapid direct assault on Moscow. The Operations Division of the Army High Command drafted a modification to the campaign plan on 30 June, although they never presented the plan to Hitler.[73] The major points were:

Two armies, composed of infantry divisions, would launch a frontal attack on Moscow. The axis of the southern army's advance would be the Roslavl-Moscow road. The northern army's advance would be the Bely-Rzhev-Dmitrov line. On the right of the southern army, Second Panzer Group would thrust into the area south of Moscow, cutting railroads heading south, and support the right wing of the southern army. On the left, Third Panzer Group would drive in the direction of Kalinin, cut the lines of communications between Moscow and Leningrad, seize the area north of Moscow, and support the left wing of the northern army. Another infantry army would move up behind the Second Panzer Group, dislodge the Russian forces north of Gomel and establish flank security along the Bryansk-Pogost line. The German planners estimated that after maintenance of the armored and motorized units, the advance could begin on 12 August and they could reach Moscow in the beginning of September.

In sum, the feasibility test helped us to determine that the Germans could have captured Moscow in the early stages of the campaign. This completes the final step of the Operational Logic methodology.

V. Conclusions

The research question for this monograph was: Which, if any, of the German operational objectives for the second phase of the campaign were also Soviet operational centers of gravity?

The premise here is that the Germans would have been better off developing a plan which focused combat power against centers of gravity instead of diluting combat power across a broad front. As we have already mentioned, centers of gravity are derivative of the aims or objectives established at the level for which one is planning. Second, aims or objectives established at one level of war should contribute to our ability to impose our will over the center of gravity at the next higher level. Ultimately, all aims and objectives at the operational and tactical levels must contribute to the accomplishment of the strategic center of gravity. If no linkage exists between these levels, operational and tactical objectives begin to shape strategy. Eventually, this happened to German strategy in Barbarossa. Tactical successes--like the encirclement of Russian forces at Kiev--began to drive German strategy causing forces to be diverted away from operational objectives. This brings us back to our original premise. If one of the German operational objectives was an operational center of gravity, the German could have concentrated combat power during the second phase of the campaign.

This monograph concludes that Moscow was the operational center of gravity for Operation Barbarossa. Its capture would help in the accomplishment of the operational aims--destroy or capture Soviet war-making potential--since the Moscow industrial area accounted for the greatest

percentage of industrial production of any single area in the Soviet Union. While Leningrad and the Ukraine offered attractive industrial centers as well, the Soviet Military would have felt the effects from the capture Moscow immediately. Which brings us to the most important reason why Moscow was the operational center of gravity: the direct and intrinsic relationship between Moscow and the strategic center of gravity--the Soviet Military.

With Moscow identified as the operational center of gravity, German military planners would have avoided diluting combat power across a 2000 mile front. Instead, they could have focused their main effort attack on an immediate and direct thrust to capture Moscow. This is not to imply that the Germans should have disregarded Leningrad and the Ukraine. Instead, they should have relegated them to secondary status with Moscow as the primary focus.

Appendix A: Key Terms

Center of Gravity. The hub of all power and movement upon which everything depends. It is that characteristic, capability, or location from which enemy and friendly forces derive their freedom of action, physical strength, or will to fight. Centers of gravity exist at each level of war and can develop or change during the course of the campaign.[74]

Culmination. In the offense, the culminating point is that point in time and location when the attacker's combat power no longer exceeds that of the defender. In the defense, a defender reaches culmination when he no longer has the capability to launch a counteroffensive or defend successfully.[75]

Lines of Operation. These lines define the directional orientation of the force in time and space in relation to the enemy. They connect the force with its base of operations and its objectives.[76]

Strategic level of War. This level is concerned with national or, in specific case, alliance or coalition objectives.[77]

Operational level of War. This level is the link between the strategic objectives and the tactical employment of forces. At this level, military forces attain strategic

objectives through the design, organization, and conduct of campaigns and major operations.[79]

Tactical level of War. This level is concerned with the execution of battles and engagements, successes and failures at this level, as viewed by the operational-level commander, and sets the conditions for operational maneuver.[79]

Decisive Points. Decisive points are the keys to getting at centers of gravity. They are often geographical in nature and offer the one who secure them with a marked advantage over the enemy and greatly influence the outcomes of an action. [90]

Operational Art. The employment of military forces to attain strategic and operational objectives through the design, organization, integration, and conduct of strategies, campaigns, major operations, and battles.[91]

Appendix B: Operational Area Map

Endnotes

1. Barry A. Leach, German Strategy Against Russia, 1939-1941. (Oxford: Clarendon Press 1973), 192.

2. U.S. Army. FM 100-5, Field Service Regulation-Operations. (Washington, D.C.: Department of the Army, 1993), 6-7. The others are: Culmination, Lines of Operation, and Decisive Points.

3. Much of the discussion in this section came from notes taken during classroom discussions.

4. Carl Von Clausewitz, On War. ed. and trans. Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1976),595-596.

5. Ibid., 619.

6. Ibid., 248.

7. Ibid., 204.

8. Ibid., 485.

9. Ibid.

10. Ibid., 596-597.

11. Ibid., 596.

12. Joint Publication 5-00.1, Doctrine For Joint Campaign Planning. (Initial Draft), (Washington, D.C.: June 1992), III-23.

13. Ibid., III-24.

14. Ibid., III-35.

15. Ibid.

16. FM 100-5, 1-5.

17. Ibid., 6-7.

18. William Mendel and Lamar Tooke. "Operational Logic: Selecting the Center of Gravity." Military Review, vol. LXXIII, no. 6, (June 1993), 3.

19. FM 100-5, 6-2 - 6-6.

20. Mendel, Operational Logic: Selecting the Center of Gravity, 6.

21. Ibid., 5.

22. Ibid.

23. Matthew Cooper. The German Army 1933-1945. (Michigan: Scarborough House Publishers,1978), 169.

24. Larry H. Addington. The Patterns of War since the Eighteenth Century, Bloomington: Indiana University press, 1984), 182.

25. Ibid., 185.

26. Cooper, The German Army 1933-1945., 191.

27. U.S. Army. The German Campaign in Russia--Planning and Operations 1940-1942. D.A. Pam No. 20-261a: (Washington, D.C.: Department of the Army, 1955), 1; Cooper, The German Army 1933-1945., 259.

28. Certainly this is not the only explanation offered by historians for the German invasion of the Soviet Union. Others include a preventive strike as the Soviets were undertaking enormous efforts to modernize their armed forces, and as an indirect means for defeating Britain.

29. Leach, German Strategy Against Russia, 1939-1941., 11.

30. Ibid., 12; Also, General Erich von Manstien wrote in Lost Victories. (Novato: Persidio Press, 1982), 176, that Hitler considered Leningrad the "cradle of Bolshevism."

31. Department of Military Art and Engineering, United States Military Academy. The War in Eastern Europe. (New York: West Point, 1952), 11. The 106 infantry divisions included: six mountain, one cavalry, and nine security.

32. 3 panzer, 2 motorized, 23 infantry.

33. 9 panzer, 5 motorized, 39 infantry.

34. 5 panzer, 2 motorized, 38 infantry

35. 2 panzer, 1 motorized, 6 infantry.

36. 360 bombers/dive-bombers, 210 fighters, 30 reconnaissance.

37. 490 bombers/dive-bombers, 390 fighters, 30 reconnaissance.

38. 270 bombers/dive-bombers, 110 fighters, 50 reconnaissance.

39. Department of Military Art and Engineering, United States Military Academy. The War in Eastern Europe. (New York: West Point, 1952), 9.

40. U.S. Army. The German Campaign in Russia--Planning and Operations 1940-1942., 43. The Baltic Group consisted of two armies, the Northwest group had four armies, and the Southwest Group had four as well.

41. Ibid., 42. The type aircraft were: 800 obsolete close reconnaissance aircraft, 2000 fighters including 250-300 modern aircraft, 1800 bombers including 800 modern aircraft, 700 fighter-bombers most of which were obsolete, 700 naval aircraft of obsolete design.

42. Leach, German Strategy Against Russia, 1939-1941., 273. Soviet Naval Strengths in both Fleets were:

	Baltic	Black
Battleships	2	1
Crusiers	2	5
Destroyers	23	20
Torpedo Boats	7	6
Mine-Detector	50	0
Boats	14	0
Minelayers	7	5
Minesweepers	21	13
Submarines	59	42
Motor Boats	79	unknown
Gun Boats	48	unknown

43. Department of Military Art and Engineering, United States Military Academy. The War in Eastern Europe., 17.

44. Tactical and operational surprise is probably more accurate as some Soviet Army units were unprepared and even went "into action with blank ammunition," as Army Group Center drove 80km deep into Russian territory severing the Soviet telecommunications network. Wladyslaw Anders. Hitler's Defeat in Russia. (Chicago: Henry Regnery Company, 1953), 32;

R.H.S. Stolfi. Hitler's Panzers East: World War II Reinterpreted. (London: Univ. of Oklahoma Press, 1991), 90. Numerous historians have written that the Soviet Political and Military Command structure was aware of Directive 21. Brian Fugate noted in: Operation Barbarossa: Strategy and Tactics on the Eastern Front, 1941. (California: Presidio Press, 1984),39, that Stalin had received word of the German invasion in a letter one week after Directive 21 was issued.

45. Manstein, Lost Victories, 176.

46. Leach, German Strategy Against Russia, 1939-1941,160.

47. Manstein, Lost Victories, 177.

48. Although there were changes to Directive 21, this directive provides the fundamental ideas and strategy which decided the course of the war against the Soviet Union.

49. Other strategic military objectives mentioned in the planning phase were briefed to Hitler on 21 July 1940. These included:

A. Defeat the Russian Army or seize enough Russian territory critical German facilities would be beyond range of Russian bombers.

B. Advance far enough in Russian territory to bring important Russian production centers of European Russia within striking distance of the German Air Force.

50. Directive 21: U.S. Army, The German Campaign in Russia--Planning and Operations 1940-1942, 22.

51. Ibid.

52. Ibid.

53. Brian Fugate. Operation Barbarossa: Strategy and Tactics on the Eastern Front, 1941. (California: Presidio Press, 1984), 87.

54. Ibid.

55. Directive 21: U.S. Army, The German Campaign in Russia--Planning and Operations 1940-1942, 24.

56. Directive 21 noted that "simultaneous drives toward both objectives [Leningrad and Moscow] might be envisaged only in

the event of an unexpectedly rapid collapse of the Russian resistance." Whether or not Moscow was part of the second phase is questionable. Hitler favored advancing towards it only after the capture of Leningrad while the military clearly favored an assault prior to Leningrad. For this reason, it is included for analysis.

57. While it is true that some of the political direction the German High Command received was perhaps the primary cause for the failure of Barbarossa, (both during planning and execution) the point here is that the initial guidance provided the basis for the campaign plan regardless of how good it was.

58. This was the primary reason why the German Navy backed Hitler for an attack on Leningrad instead of Moscow.

59. Directive 21, 18 December 1941.

60. Paul Carell. Hitler Moves East 1941-1943. (Boston, Little Brown Company, 1964) 89.

61. Ibid.

62. Stolfi. Hitler's Panzers East: World War II Reinterpreted., 63 & 89. The percentages for the top three in December 1941 were:

1. Moscow 8.20%
2. Leningrad..4.90%
3. Gorki.....1.65%

63. Heinz Guderian. Panzer Leader. (New York: E.P. Duton & Co. 1952), 199.

64. Leach, German Strategy Against Russia, 1939-1941, 251.

65. Ibid., 108.

66. Ibid., 101.

67. Ibid., 251.

68. Anders. Hitler's Defeat in Russia, 77.

69. U.S. Army, The German Campaign in Russia--Planning and Operations 1940-1942, 24.

70. Cooper, The German Army 1933-1945, 263.

71. In a discussion with the Colonel Mendel he pointed out that it is at this point in the process that the methodology transitions from science to art. So far we have used a scientific process to help select centers of gravity; however, once the commander has this information it becomes a cognitive process of knowing and judging in which the commander relies on his experience and knowledge of the enemy when selecting a center of gravity.

72. Department of Military Art and Engineering, United States Military Academy. The War in Eastern Europe., 8.

73. U.S. Army, The German Campaign in Russia--Planning and Operations 1940-1942, 53-56.

74. FM 100-5, 6-7.

75. Ibid., 6-8.

76. Ibid., 6-7.

77. Ibid., 1-3.

78. Ibid.

79. Ibid.

80. Ibid., 6-7.

81. Joint Publication 5-00.1, Doctrine For Joint Campaign Planning, II-1.

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